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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,983	03/23/2001	Mark Lynn Jenson	1327.005US1	7609

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EXAMINER	
BELL, BRUCE F	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/815,983	JENSON ET AL.	
	Examiner	Art Unit	
	Bruce F. Bell	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5,7,9,13-22,37-87,91-119 and 121-132 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5,7,9,16-22,37-61,80-84,87,91-95,97-99,106-113,117,118,123-125 and 132 is/are rejected.

7)☒ Claim(s) 13-15,62-79,85,86,96,100-105,114-116,119,121,122 and 126-131 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 March 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 03/15/06.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The examiner in charge of this application has determined that the subject matter in the instant claims does not have support in the U.S. Provisional Application 60/225,134 for the specific electron voltages and therefore, has not been given benefit of this priority date with respect to the rejection made below.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 9, 16-22, 37, 38, 42-49, 53-58, 80-84, 87, 91-95, 99, 106-113, 117, 118, 123-125 and 132 are rejected under 35 U.S.C. 102(e) as being anticipated by Goldner et al (6982132).

Goldner et al disclose a rechargeable thin film battery and method for making the same. See Title. Goldner et al defines "thin film" to be equal to or less than 2 microns in thickness. See col. 6, line 64 – col. 7, line 2. Goldner et al further defines the phrase "energetic ions to be charged ionic chemical species having a mean kinetic energy distribution between 50 to 100 eV. See col. 7, lines 22-24. The rechargeable thin film battery is assembled on an electrically conductive substrate by depositing a current collector/cathode, an electrolyte and an anode/current collector. Materials for the

current collector/cathode are metals and their alloys, which metals can be aluminum, copper, cobalt, nickel, chromium, vanadium, molybdenum, zirconium, tantalum, niobium and hafnium. See col. 8, lines 20-54. The anode/current collector is disclosed to be materials that are reversible lithium insertion materials such as graphite or carbon, tin oxide, indium oxide, indium tin oxide and amorphous tin oxide glasses. See col. 9, lines 38-67. The electrolyte layer is disclosed to be 0.8 to 2.25 μm thick and can be deposited onto the anode by an innovative ion-assisted thermal evaporation process. This process yields a high density, high ionic conductivity, low electronic conductivity, high decomposition potential which is higher than the characteristic cell operating voltage and a high decomposition or breakdown electric field. See col. 11, lines 40-47. The electrolyte is preferred to be a lithium phosphorus oxynitride (LiPON) thin film electrolyte that is deposited by an ion-assisted thermal evaporation process. See col. 11, lines 62-65. Measured densities of the LiPON electrolyte film range between 1.6 and 1.8 g/cm^3 and are significantly lower than the theoretical LiPON density. See col. 12, lines 26-29. The cathode film is deposited onto the electrolyte layer and is preferred to be of a cathode material that has an intrinsically high, reversible lithium extraction efficiency after repetitive battery chare/discharge cycles. Materials such as lithiated metal oxides and lithiated mixed oxides of cobalt, nickel, chromium and vanadium, tin oxide, indium oxide, indium tin oxide and tin oxide amorphous glasses are preferred. See col. 12, lines 30-67. The invention sets forth the use of low beam energies of less than 100 eV, in order that independent control of evaporant/ion flux ratios and ion beam energy, uniquely enable independent control of deposit crystallinity, orientation, grain size,

composition and density. See col. 15, lines 59-67. An argon gun is utilized together with an e-beam thermal evaporator gun and power supply controller, wherein the ion gun provides for an ion beam energy in electron volts of approximately 60% of the anode voltage for the singly charged ions used in the method. The relationship between beam energy and anode voltage is obtained from ion beam calibration plots. See col. 17, lines 18-34. The method disclosed in Goldner et al, pre-sputters the substrate with the argon ion gun beam and then shuts off gun and heats the sputtered layer with the e-beam evaporator gun, until the deposition starts to form on the substrate and then the ion gun is switched back on and deposition proceeds until the desired film thickness is achieved. See col. 17, lines 35-53. The electrolyte is deposited onto the anode is the same manner. See col. 17, line 54 – col. 18, line 4. The deposition rate of the electrolyte film is at least 15 angstroms per second and the film density is 1.4 g/cm^3. See col. 18, lines 32-41.

The prior art of Goldner et al anticipates the applicant's instant invention as set forth above with respect to the instant claims. The same materials and deposition method are set forth in Goldner et al as is set forth by applicant's instant invention. Therefore, the prior art of Goldner et al anticipates the applicant's instant invention as set forth by way of the disclosure to Goldner et al above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 7, 39-41, 50-52, 59-61, 97, 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldner et al (6982132).

Goldner et al is as disclosed above in the 35 USC 102(e) rejection above.

Goldner et al does not specifically recite the ranges set forth in the instant claims. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because even though the prior art of Goldner et al does not disclose a specific range, Goldner et al does disclose that low beam energies of less than 100 eV are used for the deposition process for the purpose of independent control of deposit crystallinity, orientation, grain size, composition and density. Therefore, one having ordinary skill in the art would have the ability to optimize the process to give the particular material deposition properties needed.

Allowable Subject Matter

5. Claims 13-15, 62-79, 85, 86, 96, 100-105, 114-116, 119, 121, 122, 126-131 are allowable over the prior art of record.

6. Claims objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach and/or suggest a method of fabricating a thin-film battery having an electrolyte with a thickness of less than about 5000

angstroms. The closest prior art to Goldner et al discloses that the dual deposition method may be used for the deposition of the thin film battery by using 100 eV or less, but does not disclose the deposition of the electrolyte as being less than 5000 angstroms. Goldner et al discloses the thickness to be 0.8 to 2.2 micrometers, where as the instant invention is disclosed to be 5000 angstroms (0.5 micrometers).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bruce Bell

BFB
March 29, 2006

Bruce F. Bell
Primary Examiner
Art Unit 1746